

Listing of the Claims as Amended:

Claims 1-31 (cancelled).

32 (currently amended). The DNA molecule of claim ~~29~~ 139 wherein said amino acid sequence is at least about 90% identical to the amino acid sequence of the first native vertebrate growth hormone.

Claims 33-37 (cancelled).

38 (currently amended). The DNA molecule of claim ~~11~~ 139 wherein the mutations include at least one substitution ~~according to (II) above~~ which is of a residue which is part of an alpha helix of said first native vertebrate growth hormone and which substitute amino acid has a greater alpha helical propensity than did the corresponding residue of said first native vertebrate growth hormone.

Claim 39 (cancelled).

40 (previously presented). The DNA molecule of claim 121, further comprising a promoter operably linked to said coding sequence whereby said variant may be expressed in a host cell compatible with said promoter.

41 (previously presented). The DNA molecule of claim 40, wherein the promoter is a regulatable promoter.

42 (previously presented). The DNA molecule of claim 40 which is a retroviral vector.

43 (previously presented). The DNA molecule of claim 40 which is a linearized DNA.

Claims 44-106 (cancelled).

107 (previously presented). A non-naturally occurring DNA molecule comprising a coding sequence encoding a vertebrate growth hormone variant comprising an amino acid substitution of an amino acid, other than glycine or alanine, for the amino acid of said vertebrate growth hormone at the position corresponding to the glycine at position 119 of bovine growth hormone, wherein the growth hormone variant has

vertebrate growth hormone inhibitory activity, with the proviso that said variant does not correspond to human growth hormone with all of the following substitutions and no others: Y111V, L113I, K115E, D116Q, E118K, E119R, G120L, Q122E, T123G, G126L, R127I and E129S.

108 (cancelled)

109 (previously presented). A non-naturally occurring DNA molecule comprising a coding sequence encoding a vertebrate growth hormone variant comprising lysine at the position corresponding to the glycine at position 119 of bovine growth hormone, wherein the growth hormone variant has vertebrate growth hormone inhibitory activity.

110 (previously presented). A non-naturally occurring DNA molecule comprising a coding sequence encoding a vertebrate growth hormone variant comprising arginine at the position corresponding to the glycine at position 119 of bovine growth hormone, wherein the growth hormone variant has vertebrate growth hormone inhibitory activity.

Claims 111-119 (cancelled).

120 (previously presented). A non-naturally occurring nucleic acid molecule which encodes a variant of a vertebrate growth hormone, wherein the variant comprises an amino acid sequence which is at least 80% identical to the native vertebrate growth hormone amino acid sequence, and wherein the amino acid position corresponding to amino acid Gly 119 of bovine growth hormone is an amino acid other than glycine or alanine, said variant having growth hormone receptor antagonist activity, with the proviso that said antagonist is not human growth hormone having all of the following substitutions and no others: Y111V, L113I, K115E, D116Q, E118K, E119R, G120L, Q122E, T123G, G126L, R127I and E129S.

121 (previously presented). The nucleic acid molecule of claim 120 which is a DNA molecule.

122 (previously presented). The nucleic acid molecule of claim 121 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is arginine.

123 (previously presented). The nucleic acid molecule of claim 121 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is tryptophan.

124 (previously presented). The nucleic acid molecule of claim 121 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is proline.

125 (previously presented). The nucleic acid molecule of claim 121 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is lysine.

126 (previously presented). The nucleic acid molecule of claim 121 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is leucine.

127 (previously presented). The molecule of claim 121 where the vertebrate growth hormone is a mammalian growth hormone.

128 (previously presented). The nucleic acid molecule of claim 127 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is arginine.

129 (previously presented). The nucleic acid molecule of claim 127 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is tryptophan.

130 (previously presented). The nucleic acid molecule of claim 127 in which the amino acid at the position

corresponding to amino acid Gly 119 of bovine growth hormone is proline.

131 (previously presented). The nucleic acid molecule of claim 127 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is lysine.

132 (previously presented). The nucleic acid molecule of claim 127 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is leucine.

133 (previously presented). The nucleic acid molecule of claim 127 in which the mammalian growth hormone is human growth hormone.

134 (previously presented). The nucleic acid molecule of claim 133 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is arginine.

135 (previously presented). The nucleic acid molecule of claim 133 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is tryptophan.

136 (previously presented). The nucleic acid molecule of claim 133 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is proline.

137 (previously presented). The nucleic acid molecule of claim 133 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is lysine.

138 (previously presented). The nucleic acid molecule of claim 133 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is leucine.

139 (previously presented). A non-naturally occurring nucleic acid molecule which encodes a variant of a vertebrate growth hormone, wherein the variant comprises an amino acid sequence which is at least 80% identical to the native vertebrate growth hormone amino acid sequence, and wherein the amino acid position corresponding to amino acid Gly 119 of bovine growth hormone is an amino acid other than glycine or alanine, said variant having growth hormone receptor antagonist activity, where said vertebrate growth hormone is selected from the group consisting of bovine, porcine, ovine, rat, flounder, yellowtail, tuna, salmon and chicken growth hormones.

140 (previously presented). The nucleic acid molecule of claim 139 which is a DNA molecule.

141 (previously presented). The nucleic acid molecule of claim 140 in which the mammalian growth hormone is bovine growth hormone.

142 (previously presented). The nucleic acid molecule of claim 140 in which the mammalian growth hormone is porcine growth hormone.

143 (previously presented). The nucleic acid molecule of claim 140 in which the mammalian growth hormone is ovine growth hormone.

144 (previously presented). The nucleic acid molecule of claim 140 in which the mammalian growth hormone is rat growth hormone.

145 (previously presented). The nucleic acid molecule of claim 140 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is arginine.

146 (previously presented). The nucleic acid molecule of claim 140 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone

is tryptophan.

147 (previously presented). The nucleic acid molecule of claim 140 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is proline.

148 (previously presented). The nucleic acid molecule of claim 140 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is lysine.

149 (previously presented). The nucleic acid molecule of claim 140 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is leucine.

150 (currently amended). A non-naturally occurring nucleic acid molecule which encodes a variant of a mammalian growth hormone, wherein the variant comprises an amino acid sequence which is at least 80% identical to the native mammalian growth hormone amino acid sequence, and wherein the amino acid position corresponding to amino acid Gly 119 of bovine growth hormone is an amino acid other than glycine or alanine, said variant having growth hormone receptor antagonist activity, where said variant has an alpha helix, corresponding to the third alpha helix (AAs 106-129) of bovine growth hormone, which is at least 80% identical, but not completely identical, to the alpha helix of said mammalian growth hormone which corresponds to the third alpha helix (AAs 106-129) of bovine growth hormone.

151 (previously presented). The nucleic acid molecule of claim 150 in which the mammalian growth hormone is human growth hormone.

152 (previously presented). The nucleic acid molecule of claim 150 in which the mammalian growth hormone is bovine growth hormone.

153 (previously presented). The nucleic acid molecule of claim 150 in which the amino acid position corresponding to amino acid Gly119 of bovine growth hormone is arginine.

154 (previously presented). The nucleic acid molecule of claim 150 in which the amino acid position corresponding to amino acid Gly119 of bovine growth hormone is tryptophan.

155 (previously presented). The nucleic acid molecule of claim 150 in which the amino acid position corresponding to amino acid Gly119 of bovine growth hormone is proline.

156 (previously presented). The nucleic acid molecule of claim 150 in which the amino acid position corresponding to amino acid Gly119 of bovine growth hormone is lysine.

157 (previously presented). The nucleic acid molecule of claim 150 in which the amino acid position corresponding to amino acid Gly119 of bovine growth hormone is leucine.

158 (previously presented). The nucleic acid molecule of claim 121 in which the amino acid position corresponding to amino acid Gly119 of bovine growth hormone is not proline.

159 (previously presented). The nucleic acid molecule of claim 121 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is at least as large in volume as proline.

160 (previously presented). The nucleic acid molecule of claim 121 in which the amino acid at the position corresponding to amino acid Gly 119 of bovine growth hormone is at least as large in volume as leucine.

161 (previously presented). A cell transformed by the DNA molecule of claim 40, and which expresses said variant.

162 (currently amended). A method of producing a mammalian growth hormone variant having growth hormone receptor antagonist activity, which comprises maintaining cells of claim ~~154~~ 161 under conditions conducive to the expression of said variant.